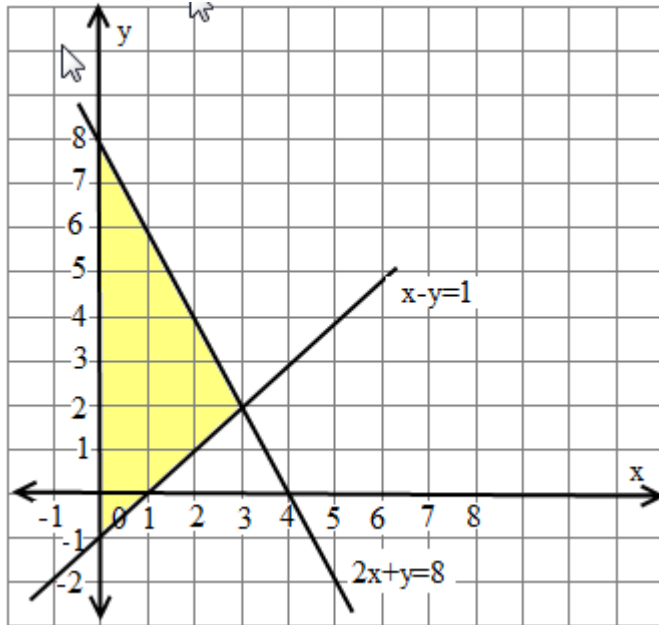




9th Linear Equation in two Variables [Practice Paper-03]

1. Draw the graphs of the equations $x - y = 1$ and $2x + y = 8$. Shade the area bounded by these two lines y – axis. Also determine this area.

Solution:



The area of the shaded region = $\frac{1}{2} \times 9 \text{ unit} \times 3 \text{ unit} = 13.5 \text{ sq. unit}$

2. A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Aarushi paid Rs 27 for a book kept for seven days. If fixed charges are Rs x and per day charge are Rs y . Write the linear equation representing the above information.

Solution: Given fixed charges = Rs x and Charge per day = Rs y

Given Aarushi paid Rs.27 for a book kept for seven days

That is fixed charge for 3 days + variable charge for 4 days

Hence $x + 4y = 27$

3. A number is 27 more than number obtained by reversing its digits. If its unit's and ten's digit are x and y respectively, write the linear equation representing the above statement.

Solution: Given its unit's and ten's digit are x and y respectively \Rightarrow Original Number = $(10y + x)$

Number obtained by reversing the digits = $(10x + y)$

The number is 27 more than the number obtained by reversing the digits

$\Rightarrow (10y + x) = (10x + y) + 27.$

$\Rightarrow 9x - 9y + 27 = 0 \Rightarrow x - y + 3 = 0$

The linear equation representing the given statement is $x - y + 3 = 0.$

4. A three – wheeler scooter charges Rs 15 for first kilometer and Rs 8 each for every subsequent kilometer . For a distance of x km, an amount of Rs y is paid. Write the linear equation representing the above information.

Solution: Given, charges Rs 15 for first kilometer and Rs 8 each for every subsequent kilometer that is $(x-1)$



$$15 + (x - 1) \times 8 = y \Rightarrow Y = 8x + 7$$

5. The sum of a two digit number and the number obtained by reversing the order of its digits is 121. If units and ten's digit of the number are x and y respectively, then write the linear equation representing the above statement.

Solution: Given its unit's and ten's digit are x and y respectively \Rightarrow Original Number = $(10y + x)$

Number obtained by reversing the digits = $(10x + y)$

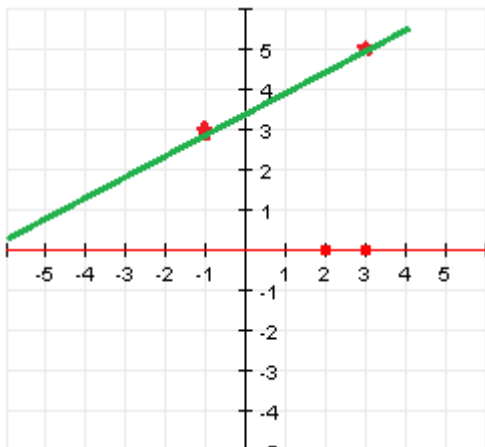
The sum of a two digit number and the number obtained by reversing the order of its digits is 121

$$\Rightarrow (10y + x) + (10x + y) = 121. \quad \Rightarrow 11x + 11y = 121 \quad \Rightarrow x + y - 11 = 0$$

The linear equation representing the given statement is $x - y + 3 = 0$.

6. Plot the points (3, 5) and (-1, 3) on a graph paper and verify that the straight line passing through these points also passes through the point (1, 4).

Solution: Yes,



7. If the point (2 , - 2) lies on the graph of the linear equation $5x + ky = 4$, find the value of K.

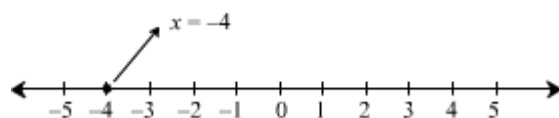
Solution: $x = 2$ and $y = - 2$

$$5 \times 2 + k \times - 2 = 4 \Rightarrow 10 - 4 = 2k \Rightarrow k = 3$$

8. Solve the equation $2x + 1 = x - 3$, and represent the solution (s) on (i) the number line (ii) the Cartesian plane.

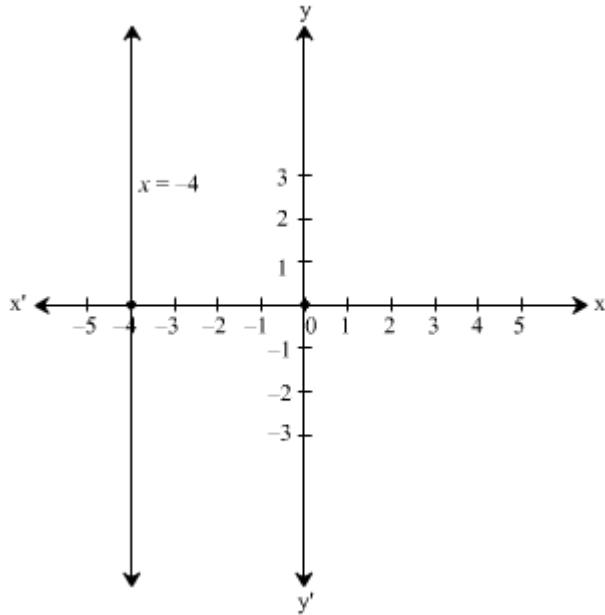
$$2x + 1 = x - 3 \Rightarrow 2x - x = -3 - 1 \Rightarrow x = - 4$$

(i) $x = - 4$ can be represented on the number line as below:



(ii) $x = - 4$ can be represent on the cartesian plane as below:

x	- 4	- 4	- 4	- 4
y	1	2	3	1



9. Draw the graph of the equation $2x + y = 6$. Shaded the region bounded by the graph and the coordinate axes. Also, find the area of the shaded region.

Solution: (i) let $x = 0$ then $y = 6$ (ii) let $x = 3$ then $y = 0$

Now, we got two points $(0,6)$, $(3,0)$. Plot them on graph.

Distance from origin on x axis = 3 and distance from origin on y axis = 6

We got a triangle whose sides are 6 and 3

Thus, area of triangle = $\frac{1}{2} \times 6 \times 3 = 3 \times 3 = 9$ sq. unit

10. Ravish tells his daughter Aarushi, "Seven years ago, I was seven times as old as you were then. Also, three years from now, I shall be three times as old as you will be". If present ages of Aarushi and Ravish are x and y years respectively, represent this situation algebraically as well as graphically

Solution: Given, present ages of Aarushi and Ravish are x and y years respectively.

Seven years ago, Age of Aarushi = $(x - 7)$ years and Age of Ravish = $(y - 7)$ years

Age of Ravish = $7 \times$ Age of Aarushi

$$\Rightarrow y - 7 = 7(x - 7) \Rightarrow y - 7 = 7x - 49 \Rightarrow 7x - y = 42 \dots(i)$$

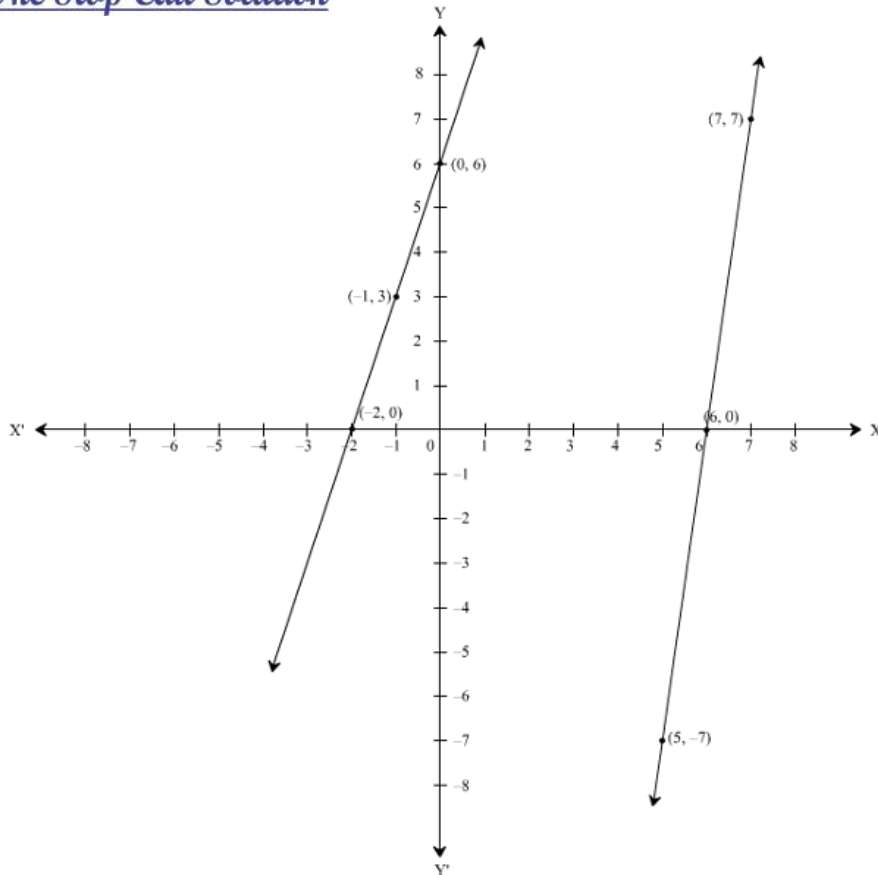
Three years hence,

Age of Aarushi = $(x + 3)$ years and Age of Ravish = $(y + 3)$ years

Age of Ravish $3 \times$ Age of Aarushi

$$\Rightarrow y + 3 = 3(x + 3) \Rightarrow y + 3 = 3x + 9 \Rightarrow 3x - y = -6 \dots(ii)$$

The given situation can be represented algebraically by the system of simultaneous equation given by $7x - y = 42$ and $3x - y = -6$. Consider the equation $7x - y = 42$.



11. Aarushi was driving a car with uniform speed of 60 km/h. Draw distance – time graph. From the graph, find the distance travelled by Aarushi in (a) 2 and $\frac{1}{2}$ Hours (b) $\frac{1}{2}$ hours

Solution: Speed = distance/ time = 60 \Rightarrow D = 60t

